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## **Supplemental Material**

# **Exposure Classification and Temporal Variability in Urinary Bisphenol-A Concentrations among Couples in Utah— The HOPE Study**

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**Table S1.** Surrogate category analysis among females, Analysis 1

Repeat samples	Sensitivity		Specificity		Positive Predictive Value	
	Median (IQR)	Mean (95% CI)	Median (IQR)	Mean & CI	Median (IQR)	Mean & CI
High Tertile						
1	0.59 (0.53, 0.71)	0.63 (0.62, 0.64)	0.76 (0.73, 0.85)	0.78 (0.78, 0.78)	0.52 (0.29, 0.78)	0.53 (0.52, 0.54)
2	0.65 (0.65, 0.78)	0.71 (0.71, 0.71)	0.79 (0.77, 0.90)	<b>0.82 (0.82, 0.82)</b>	0.59 (0.40, 0.79)	0.61 (0.61, 0.62)
3	0.73 (0.70, 0.80)	0.75 (0.75, 0.75)	<b>0.83 (0.81, 0.93)</b>	0.85 (0.85, 0.85)	0.69 (0.48, 0.83)	0.68 (0.68, 0.68)
4	0.77 (0.75, 0.83)	0.79 (0.79, 0.79)	0.85 (0.85, 0.95)	0.88 (0.88, 0.88)	0.75 (0.52, 0.95)	0.74 (0.74, 0.74)
5	<b>0.80 (0.78, 0.95)</b>	<b>0.82 (0.82, 0.82)</b>	0.87 (0.87, 0.97)	0.90 (0.90, 0.90)	<b>0.88 (0.55, 0.97)</b>	0.79 (0.79, 0.79)
6	0.83 (0.83, 0.97)	0.85 (0.85, 0.85)	0.89 (0.88, 0.98)	0.92 (0.92, 0.92)	0.89 (0.59, 0.98)	<b>0.83 (0.83, 0.83)</b>
7	0.85 (0.85, 0.98)	0.88 (0.88, 0.88)	0.94 (0.90, 0.98)	0.93 (0.93, 0.94)	0.90 (0.86, 0.99)	0.87 (0.86, 0.87)
8	0.87 (0.87, 0.98)	0.90 (0.90, 0.90)	0.98 (0.91, 0.99)	0.94 (0.94, 0.95)	0.91 (0.91, 0.99)	0.89 (0.89, 0.89)
9	0.88 (0.88, 0.99)	0.91 (0.91, 0.91)	0.99 (0.91, 0.99)	0.95 (0.95, 0.96)	0.97 (0.92, 0.99)	0.92 (0.92, 0.92)
10	0.90 (0.90, 0.99)	0.93 (0.93, 0.93)	0.99 (0.92, 0.99)	0.96 (0.96, 0.96)	0.99 (0.93, 0.99)	0.93 (0.93, 0.93)
11	0.91 (0.91, 0.99)	0.94 (0.94, 0.94)	0.99 (0.93, 0.99)	0.96 (0.96, 0.97)	0.99 (0.93, 0.99)	0.95 (0.95, 0.95)
12	0.92 (0.92, 0.99)	0.94 (0.94, 0.94)	0.99 (0.93, 0.99)	0.97 (0.97, 0.97)	0.99 (0.94, 0.99)	0.96 (0.96, 0.96)
13	0.93 (0.93, 0.99)	0.95 (0.95, 0.95)	0.99 (0.94, 0.99)	0.97 (0.97, 0.98)	0.99 (0.94, 0.99)	0.96 (0.96, 0.96)
14	0.94 (0.94, 0.99)	0.96 (0.96, 0.96)	0.99 (0.95, 0.99)	0.98 (0.98, 0.99)	0.99 (0.95, 0.99)	0.97 (0.97, 0.97)
15	0.95 (0.95, 1.00)	0.97 (0.97, 0.97)	1.00 (0.96, 1.00)	0.99 (0.99, 0.99)	1.00 (0.96, 1.00)	0.98 (0.98, 0.98)
16	0.96 (0.96, 1.00)	0.97 (0.97, 0.97)	1.00 (0.96, 1.00)	0.99 (0.99, 0.99)	1.00 (0.97, 1.00)	0.99 (0.99, 0.99)
17	0.97 (0.97, 1.00)	0.98 (0.98, 0.98)	1.00 (0.97, 1.00)	0.99 (0.99, 0.99)	1.00 (0.97, 1.00)	0.99 (0.99, 0.99)
18	0.98 (0.98, 0.98)	0.98 (0.98, 0.98)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
19	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
20-23	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Medium Tertile						
1	0.35 (0.27, 0.42)	0.37 (0.36, 0.37)	0.79 (0.72, 0.80)	0.77 (0.76, 0.77)	0.56 (0.54, 0.63)	0.59 (0.58, 0.59)
2	0.40 (0.36, 0.49)	0.41 (0.41, 0.42)	0.76 (0.71, 0.80)	0.77 (0.77, 0.77)	0.63 (0.59, 0.65)	0.61 (0.61, 0.61)
3	0.45 (0.39, 0.49)	0.47 (0.47, 0.47)	0.75 (0.72, 0.80)	0.77 (0.77, 0.77)	0.68 (0.58, 0.69)	0.63 (0.63, 0.63)
4	0.51 (0.45, 0.54)	0.51 (0.51, 0.51)	0.75 (0.73, 0.81)	0.78 (0.78, 0.78)	0.67 (0.62, 0.74)	0.64 (0.64, 0.65)
5	0.54 (0.49, 0.59)	0.56 (0.56, 0.56)	<b>0.82 (0.76, 0.82)</b>	<b>0.80 (0.80, 0.80)</b>	0.66 (0.48, 0.76)	0.66 (0.66, 0.66)
6	0.58 (0.54, 0.63)	0.59 (0.59, 0.59)	0.84 (0.77, 0.85)	0.82 (0.82, 0.82)	0.68 (0.55, 0.78)	0.69 (0.69, 0.69)
7	0.60 (0.59, 0.66)	0.63 (0.63, 0.63)	0.85 (0.79, 0.93)	0.84 (0.84, 0.84)	0.69 (0.62, 0.80)	0.71 (0.71, 0.71)
8	0.63 (0.63, 0.69)	0.67 (0.67, 0.67)	0.86 (0.81, 0.94)	0.86 (0.86, 0.86)	0.70 (0.68, 0.82)	0.74 (0.74, 0.74)
9	0.67 (0.67, 0.73)	0.70 (0.70, 0.70)	0.87 (0.87, 0.95)	0.88 (0.88, 0.88)	0.74 (0.74, 0.84)	0.77 (0.77, 0.77)
10	0.71 (0.71, 0.75)	0.74 (0.74, 0.74)	0.88 (0.88, 0.96)	0.89 (0.89, 0.89)	0.79 (0.79, 0.79)	<b>0.80 (0.80, 0.80)</b>
11	0.75 (0.75, 0.78)	0.77 (0.77, 0.77)	0.89 (0.89, 0.97)	0.90 (0.90, 0.90)	<b>0.84 (0.84, 0.84)</b>	0.84 (0.84, 0.84)
12	0.78 (0.78, 0.80)	<b>0.80 (0.80, 0.80)</b>	0.90 (0.90, 0.98)	0.92 (0.92, 0.92)	0.88 (0.88, 0.88)	0.87 (0.87, 0.87)
13	<b>0.82 (0.82, 0.82)</b>	0.83 (0.83, 0.83)	0.91 (0.91, 0.98)	0.92 (0.92, 0.92)	0.91 (0.91, 0.91)	0.89 (0.89, 0.89)
14	0.84 (0.84, 0.84)	0.85 (0.85, 0.85)	0.92 (0.92, 0.99)	0.94 (0.94, 0.94)	0.94 (0.94, 0.94)	0.92 (0.92, 0.92)
15	0.87 (0.87, 0.87)	0.88 (0.88, 0.88)	0.93 (0.93, 0.99)	0.94 (0.94, 0.94)	0.96 (0.96, 0.96)	0.94 (0.94, 0.94)
16	0.89 (0.89, 0.89)	0.90 (0.90, 0.90)	0.94 (0.94, 0.99)	0.95 (0.95, 0.95)	0.98 (0.98, 0.98)	0.97 (0.97, 0.97)
17	0.91 (0.91, 0.91)	0.92 (0.92, 0.92)	0.95 (0.95, 0.99)	0.96 (0.96, 0.96)	0.99 (0.99, 0.99)	0.98 (0.98, 0.98)
18	0.94 (0.94, 0.94)	0.94 (0.94, 0.94)	0.96 (0.96, 0.96)	0.97 (0.97, 0.97)	0.99 (0.99, 0.99)	0.98 (0.98, 0.98)
19	0.96 (0.96, 0.96)	0.96 (0.96, 0.96)	0.97 (0.97, 0.97)	0.97 (0.97, 0.97)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)
20	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.98 (0.98, 0.98)	0.98 (0.98, 0.98)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)
21-23	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)
Low Tertile						
1	0.68 (0.59, 0.95)	0.68 (0.68, 0.69)	0.72 (0.68, 0.81)	0.75 (0.75, 0.75)	0.41 (0.35, 0.58)	0.49 (0.48, 0.50)
2	0.73 (0.61, 0.96)	0.72 (0.72, 0.72)	0.79 (0.72, 0.85)	<b>0.80 (0.80, 0.80)</b>	0.47 (0.42, 0.80)	0.56 (0.56, 0.57)
3	0.75 (0.64, 0.97)	0.74 (0.74, 0.74)	<b>0.84 (0.75, 0.95)</b>	0.84 (0.84, 0.84)	0.53 (0.46, 0.88)	0.64 (0.64, 0.64)
4	0.78 (0.71, 0.98)	0.77 (0.77, 0.77)	0.87 (0.78, 0.95)	0.87 (0.87, 0.87)	0.60 (0.59, 0.89)	0.70 (0.70, 0.71)
5	<b>0.80 (0.73, 0.99)</b>	0.78 (0.78, 0.78)	0.90 (0.82, 0.96)	0.90 (0.90, 0.90)	<b>0.87 (0.63, 0.91)</b>	0.76 (0.76, 0.77)
6	0.83 (0.75, 0.83)	<b>0.81 (0.81, 0.81)</b>	0.97 (0.84, 0.99)	0.92 (0.92, 0.92)	0.93 (0.69, 0.99)	<b>0.82 (0.82, 0.82)</b>

7	0.83 (0.83, 0.85)	0.82 (0.82,0.82)	0.97 (0.92, 0.99)	0.93 (0.93, 0.93)	0.94 (0.73, 0.99)	0.86 (0.86,0.86)
8	0.84 (0.84, 0.88)	0.84 (0.84,0.84)	0.98 (0.93, 1.00)	0.95 (0.95, 0.95)	0.95 (0.91, 0.99)	0.90 (0.90,0.90)
9	0.85 (0.85, 0.90)	0.86 (0.86,0.86)	0.98 (0.94, 1.00)	0.96 (0.96, 0.96)	0.96 (0.92, 1.00)	0.93 (0.93,0.93)
10	0.86 (0.86, 0.92)	0.87 (0.87,0.87)	0.99 (0.99, 1.00)	0.98 (0.98, 0.98)	0.97 (0.97, 1.00)	0.95 (0.95,0.95)
11	0.87 (0.87, 0.93)	0.89 (0.89,0.89)	0.99 (0.99, 1.00)	0.98 (0.98, 0.98)	1.00 (0.98, 1.00)	0.97 (0.97,0.97)
12	0.88 (0.88, 0.95)	0.90 (0.90,0.90)	1.00 (0.99, 1.00)	0.99 (0.99, 0.99)	1.00 (0.99, 1.00)	0.98 (0.98,0.98)
13	0.89 (0.89, 0.96)	0.91 (0.91,0.91)	1.00 (0.99, 1.00)	0.99 (0.99, 0.99)	1.00 (0.99, 1.00)	0.99 (0.99,0.99)
14	0.90 (0.90, .970)	0.92 (0.92,0.92)	1.00 (0.99, 1.00)	0.99 (0.99, 0.99)	1.00 (0.99, 1.00)	0.99 (0.99,0.99)
15	0.91 (0.91, 0.98)	0.93 (0.93,0.93)	1.00 (0.99, 1.00)	1.00 (1.00, 1.00)	1.00 (0.99, 1.00)	1.00 (1.00,1.00)
16	0.92 (0.92, 0.99)	0.94 (0.94,0.94)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
17	0.93 (0.93, 0.99)	0.94 (0.94,0.94)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
18	0.94 (0.94, 0.94)	0.95 (0.95,0.95)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
19	0.95 (0.95, 0.95)	0.96 (0.96,0.96)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
20	0.96 (0.96, 0.96)	0.96 (0.96,0.96)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
21	0.97 (0.97, 0.97)	0.97 (0.97,0.97)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
22	0.98 (0.98, 0.98)	0.98 (0.98,0.98)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)
23	0.99 (0.99, 0.99)	0.99 (0.99,0.99)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00,1.00)

Abbreviations: IQR Interquartile Range, CI Confidence Interval

Corresponding figure in main text, Figure 1

**Bold values represent the point at which 0.80 is met or exceeded in each category**

**Table S2.** Surrogate category analysis among females, Analysis 2

Repeat samples	Sensitivity		Specificity		Positive Predictive Value	
	Median (IQR)	Mean (95% CI)	Median (IQR)	Mean & CI	Median (IQR)	Mean & CI
High Tertile						
1	0.55 (0.45, 0.68)	0.56 (0.55, 0.57)	0.74 (0.72, 0.8)	0.75 (0.75, 0.76)	0.45 (0.28, 0.77)	0.47 (0.46, 0.48)
2	0.61 (0.54, 0.76)	0.60 (0.60, 0.60)	0.78 (0.75, 0.84)	0.79 (0.79, 0.79)	0.45 (0.38, 0.79)	0.52 (0.52, 0.52)
3	0.65 (0.55, 0.75)	0.61 (0.61, 0.61)	<b>0.82 (0.78, 0.89)</b>	<b>0.83 (0.82, 0.83)</b>	0.49 (0.44, 0.83)	0.57 (0.49, 0.56)
4	0.66 (0.57, 0.77)	0.63 (0.63, 0.63)	0.85 (0.84, 0.93)	0.86 (0.85, 0.86)	0.55 (0.48, 0.86)	0.61 (0.55, 0.61)
5	0.76 (0.58, 0.80)	0.65 (0.65, 0.65)	0.87 (0.86, 0.93)	0.88 (0.88, 0.88)	0.74 (0.52, 0.88)	0.64 (0.64, 0.64)
6	<b>0.82 (0.58, 0.83)</b>	0.67 (0.67, 0.67)	0.92 (0.87, 0.93)	0.90 (0.90, 0.90)	<b>0.89 (0.55, 0.94)</b>	0.68 (0.68, 0.68)
7	0.84 (0.66, 0.94)	0.70 (0.70, 0.70)	0.93 (0.89, 0.98)	0.92 (0.92, 0.92)	0.90 (0.59, 0.94)	0.71 (0.71, 0.71)
8	0.85 (0.65, 0.94)	0.73 (0.73, 0.73)	0.93 (0.90, 0.98)	0.93 (0.93, 0.93)	0.91 (0.60, 0.93)	0.75 (0.75, 0.75)
9	0.87 (0.87, 0.94)	0.77 (0.77, 0.77)	0.99 (0.91, 0.99)	0.95 (0.95, 0.95)	0.92 (0.92, 0.93)	0.79 (0.79, 0.79)
10	0.89 (0.89, 0.94)	<b>0.81 (0.81, 0.81)</b>	0.91 (0.91, 0.91)	0.92 (0.92, 0.92)	0.92 (0.92, 0.93)	<b>0.82 (0.82, 0.82)</b>
11	0.90 (0.90, 0.94)	0.92 (0.92, 0.92)	0.92 (0.90, 0.92)	0.93 (0.93, 0.93)	0.92 (0.92, 0.93)	0.92 (0.92, 0.92)
12	0.91 (0.91, 0.91)	0.91 (0.91, 0.91)	0.89 (0.89, 1.00)	0.92 (0.92, 0.92)	0.91 (0.91, 0.91)	0.91 (0.91, 0.91)
Medium Tertile						
1	0.36 (0.19, 0.45)	0.33 (0.32, 0.34)	0.77 (0.70, 0.78)	0.74 (0.74, 0.75)	0.44 (0.25, 0.62)	0.42 (0.41, 0.43)
2	0.37 (0.29, 0.42)	0.34 (0.34, 0.35)	0.73 (0.70, 0.78)	0.73 (0.73, 0.73)	0.34 (0.27, 0.57)	0.40 (0.40, 0.41)
3	0.37 (0.30, 0.47)	0.32 (0.32, 0.33)	0.75 (0.67, 0.79)	0.73 (0.73, 0.73)	0.35 (0.28, 0.58)	0.39 (0.38, 0.39)
4	0.36 (0.23, 0.48)	0.33 (0.33, 0.33)	0.74 (0.67, 0.80)	0.74 (0.74, 0.74)	0.37 (0.29, 0.49)	0.38 (0.38, 0.38)
5	0.33 (0.28, 0.51)	0.34 (0.34, 0.34)	0.75 (0.67, 0.82)	0.75 (0.75, 0.75)	0.35 (0.29, 0.48)	0.37 (0.37, 0.37)
6	0.34 (0.00, 0.58)	0.35 (0.36, 0.35)	0.77 (0.71, 0.83)	0.77 (0.77, 0.77)	0.37 (0.00, 0.55)	0.37 (0.37, 0.37)
7	0.35 (0.00, 0.64)	0.36 (0.36, 0.36)	0.76 (0.74, 0.84)	0.78 (0.78, 0.78)	0.38 (0.00, 0.62)	0.37 (0.37, 0.37)
8	0.34 (0.00, 0.64)	0.35 (0.35, 0.35)	0.76 (0.76, 0.85)	<b>0.80 (0.80, 0.80)</b>	0.37 (0.00, 0.63)	0.36 (0.36, 0.36)
9	0.34 (0.00, 0.65)	0.34 (0.34, 0.34)	0.77 (0.77, 0.86)	0.81 (0.81, 0.81)	0.37 (0.00, 0.65)	0.34 (0.34, 0.34)
10	0.35 (0.00, 0.65)	0.33 (0.33, 0.33)	<b>0.87 (0.86, 0.94)</b>	0.86 (0.86, 0.86)	0.36 (0.00, 0.65)	0.33 (0.33, 0.33)
11	0.35 (0.00, 0.65)	0.28 (0.28, 0.28)	0.88 (0.88, 0.94)	0.90 (0.90, 0.90)	0.36 (0.00, 0.65)	0.28 (0.28, 0.28)
12			0.89 (0.89, 0.90)	0.89 (0.89, 0.89)		
Low Tertile						
1	0.57 (0.52, 0.67)	0.59 (0.58, 0.60)	0.75 (0.64, 0.83)	0.74 (0.74, 0.75)	0.48 (0.44, 0.67)	0.57 (0.56, 0.57)
2	0.63 (0.55, 0.72)	0.63 (0.63, 0.63)	0.78 (0.68, 0.85)	0.78 (0.77, 0.78)	0.58 (0.53, 0.75)	0.63 (0.63, 0.64)
3	0.68 (0.60, 0.75)	0.66 (0.66, 0.67)	<b>0.80 (0.69, 0.96)</b>	0.78 (0.78, 0.78)	0.62 (0.54, 0.86)	0.69 (0.68, 0.69)
4	0.70 (0.62, 0.78)	0.69 (0.69, 0.69)	0.83 (0.70, 0.95)	<b>0.82 (0.82, 0.82)</b>	0.71 (0.56, 0.95)	0.74 (0.74, 0.74)
5	0.74 (0.70, 0.80)	0.72 (0.72, 0.72)	0.89 (0.70, 0.96)	0.84 (0.84, 0.84)	<b>0.91 (0.60, 0.94)</b>	0.79 (0.79, 0.79)
6	0.77 (0.71, 0.81)	0.74 (0.74, 0.74)	0.92 (0.70, 0.96)	0.86 (0.86, 0.86)	0.91 (0.68, 0.92)	<b>0.83 (0.83, 0.83)</b>
7	0.77 (0.73, 0.82)	0.76 (0.76, 0.76)	0.95 (0.86, 0.96)	0.88 (0.88, 0.88)	0.93 (0.72, 0.98)	0.86 (0.86, 0.86)
8	0.76 (0.75, 0.83)	0.78 (0.78, 0.78)	0.95 (0.87, 0.97)	0.90 (0.90, 0.90)	0.94 (0.89, 0.96)	0.89 (0.89, 0.89)
9	0.77 (0.77, 0.83)	<b>0.80 (0.80, 0.80)</b>	0.94 (0.94, 0.97)	0.91 (0.91, 0.91)	0.95 (0.89, 0.95)	0.91 (0.91, 0.91)
10	<b>0.84 (0.84, 0.91)</b>	0.85 (0.85, 0.85)	0.93 (0.93, 0.97)	0.92 (0.92, 0.92)	0.88 (0.88, 0.93)	0.88 (0.88, 0.88)
11	0.88 (0.85, 0.92)	0.88 (0.88, 0.88)	0.93 (0.93, 0.97)	0.95 (0.95, 0.95)	0.93 (0.87, 0.93)	0.90 (0.90, 0.90)
12	0.86 (0.86, 0.90)	0.87 (0.87, 0.87)	0.92 (0.92, 0.92)	0.92 (0.92, 0.92)	0.86 (0.86, 0.94)	0.88 (0.88, 0.88)

Abbreviations: IQR Interquartile Range, CI Confidence Interval

Corresponding figure in main text, Figure 2. Bold values represent the point at which 0.80 is met or exceeded in each category

**Table S3.** Surrogate category analysis among males, Analysis 1

Repeat samples	Sensitivity		Specificity		Positive Predictive Value	
	Median (IQR)	Mean (95% CI)	Median (IQR)	Mean & CI	Median (IQR)	Mean & CI
High Tertile						
1	0.61 (0.56, 0.71)	0.66 (0.65, 0.67)	<b>0.81 (0.80, 0.87)</b>	<b>0.81 (0.82, 0.82)</b>	0.56 (0.53, 0.59)	0.57 (0.56, 0.58)
2	0.72 (0.71, 0.76)	0.74 (0.74, 0.74)	0.89 (0.88, 0.92)	0.88 (0.88, 0.89)	0.73 (0.68, 0.80)	0.72 (0.71, 0.73)
3	0.77 (0.75, 0.86)	0.78 (0.78, 0.79)	0.94 (0.91, 0.96)	0.92 (0.92, 0.92)	<b>0.86 (0.83, 0.88)</b>	<b>0.81 (0.80, 0.82)</b>
4	<b>0.80 (0.80, 0.90)</b>	<b>0.83 (0.82, 0.83)</b>	0.96 (0.96, 0.98)	0.95 (0.94, 0.95)	0.91 (0.91, 0.95)	0.86 (0.85, 0.87)
5	0.84 (0.80, 0.84)	0.85 (0.85, 0.86)	0.99 (0.98, 1.00)	0.97 (0.97, 0.97)	0.96 (0.96, 0.97)	0.90 (0.89, 0.90)
6	0.89 (0.84, 0.89)	0.89 (0.88, 0.89)	1.00 (1.00, 1.00)	0.99 (0.99, 0.99)	1.00 (1.00, 1.00)	0.95 (0.94, 0.96)
7	0.92 (0.91, 0.92)	0.93 (0.92, 0.93)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	0.99 (0.98, 0.99)
8	1.00 (0.93, 1.00)	0.97 (0.96, 0.98)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
9-11	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Medium Tertile						
1	0.33 (0.28, 0.42)	0.33 (0.32, 0.34)	<b>0.80 (0.74, 0.81)</b>	0.78 (0.77, 0.78)	0.53 (0.43, 0.57)	0.50 (0.48, 0.51)
2	0.59 (0.39, 0.62)	0.51 (0.51, 0.52)	0.78 (0.75, 0.85)	<b>0.80 (0.79, 0.80)</b>	0.69 (0.62, 0.71)	0.66 (0.65, 0.67)
3	0.51 (0.50, 0.72)	0.58 (0.57, 0.58)	0.83 (0.82, 0.86)	0.82 (0.82, 0.82)	0.75 (0.67, 0.76)	0.74 (0.73, 0.74)
4	0.57 (0.56, 0.69)	0.64 (0.64, 0.65)	0.87 (0.87, 0.88)	0.86 (0.86, 0.86)	<b>0.81 (0.73, 0.96)</b>	<b>0.83 (0.82, 0.83)</b>
5	0.62 (0.62, 0.91)	0.70 (0.70, 0.71)	0.90 (0.89, 0.90)	0.89 (0.89, 0.90)	0.85 (0.85, 1.00)	0.90 (0.89, 0.90)
6	0.71 (0.68, 0.95)	0.79 (0.79, 0.80)	0.94 (0.92, 0.94)	0.93 (0.93, 0.93)	1.00 (0.90, 1.00)	0.95 (0.94, 0.95)
7	<b>0.98 (0.73, 0.98)</b>	<b>0.88 (0.87, 0.89)</b>	0.97 (0.94, 0.97)	0.96 (0.96, 0.93)	1.00 (0.93, 1.00)	0.97 (0.97, 0.98)
8	0.99 (0.99, 0.99)	0.96 (0.95, 0.96)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
9-11	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Low Tertile						
1	0.75 (0.69, 0.82)	0.74 (0.73, 0.75)	0.75 (0.70, 0.81)	0.73 (0.73, 0.74)	0.62 (0.47, 0.71)	0.61 (0.60, 0.62)
2	<b>0.83 (0.79, 0.85)</b>	<b>0.80 (0.80, 0.81)</b>	<b>0.84 (0.72, 0.85)</b>	<b>0.80 (0.80, 0.80)</b>	0.70 (0.65, 0.80)	0.68 (0.67, 0.69)
3	0.85 (0.83, 0.96)	0.86 (0.86, 0.86)	0.80 (0.75, 0.90)	0.82 (0.92, 0.82)	0.73 (0.44, 0.76)	0.70 (0.69, 0.71)
4	0.90 (0.86, 1.00)	0.91 (0.91, 0.91)	0.83 (0.77, 0.87)	0.84 (0.93, 0.84)	0.76 (0.46, 1.00)	0.72 (0.71, 0.73)
5	0.95 (0.90, 1.00)	0.95 (0.94, 0.95)	0.84 (0.79, 0.91)	0.86 (0.85, 0.86)	<b>0.83 (0.48, 1.00)</b>	0.76 (0.75, 0.77)
6	0.94 (0.94, 1.00)	0.96 (0.96, 0.96)	0.86 (0.81, 0.95)	0.89 (0.89, 0.90)	1.00 (0.51, 1.00)	<b>0.83 (0.82, 0.84)</b>
7	0.97 (0.97, 0.97)	0.98 (0.98, 0.98)	0.98 (0.84, 0.98)	0.94 (0.93, 0.94)	1.00 (1.00, 1.00)	0.90 (0.89, 0.91)
8	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.99 (0.99, 0.99)	0.98 (0.97, 0.98)	1.00 (1.00, 1.00)	0.97 (0.96, 0.98)
9-11	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)

Abbreviations: IQR Interquartile Range, CI Confidence Interval

Corresponding figure in main text, Figure 3

Bold values represent the point at which 0.80 is met or exceeded in each category

**Table S4.** Surrogate category analysis among males, Analysis 2

Repeat samples	Sensitivity		Specificity		Positive Predictive Value	
	Median (IQR)	Mean (95% CI)	Median (IQR)	Mean & CI	Median (IQR)	Mean & CI
High Tertile						
1	0.56 (0.42, 0.63)	0.52 (0.51, 0.53)	<b>0.80 (0.74, 0.81)</b>	0.77 (0.77, 0.78)	0.39 (0.33, 0.58)	0.44 (0.43, 0.45)
2	0.56 (0.50, 0.68)	0.59 (0.58, 0.59)	0.85 (0.78, 0.87)	<b>0.83 (0.83, 0.83)</b>	0.50 (0.42, 0.70)	0.56 (0.56, 0.57)
3	0.73 (0.63, 0.73)	0.67 (0.67, 0.67)	0.88 (0.81, 0.92)	0.86 (0.86, 0.87)	0.73 (0.62, 0.75)	0.67 (0.67, 0.68)
4	0.73 (0.48, 0.73)	0.66 (0.65, 0.66)	0.89 (0.86, 0.99)	0.88 (0.88, 0.89)	0.73 (0.48, 0.73)	0.66 (0.65, 0.67)
5	0.75 (0.75, 0.75)	0.75 (0.75, 0.75)	1.00 (1.00, 1.00)	0.96 (0.95, 0.96)	0.75 (0.75, 0.75)	0.75 (0.75, 0.75)
6			1.00 (1.00, 1.00)	1.00 (1.00, 1.00)		
Medium Tertile						
1	0.35 (0.12, 0.35)	0.28 (0.27, 0.29)	0.77 (0.71, 0.78)	0.75 (0.74, 0.75)	0.48 (0.13, 0.49)	0.38 (0.36, 0.39)
2	0.32 (0.24, 0.37)	0.31 (0.30, 0.32)	0.68 (0.68, 0.75)	0.71 (0.71, 0.72)	0.34 (0.27, 0.51)	0.35 (0.34, 0.37)
3	0.27 (0.10, 0.40)	0.30 (0.29, 0.31)	0.69 (0.64, 0.84)	0.73 (0.73, 0.74)	0.30 (0.01, 0.47)	0.33 (0.31, 0.34)
4	0.28 (0.00, 0.41)	0.30 (0.29, 0.31)	0.64 (0.64, 0.93)	0.76 (0.76, 0.77)	0.30 (0.40, 1.00)	0.33 (0.31, 0.34)
5	0.00 (0.00, 0.90)	0.28 (0.26, 0.30)	<b>0.95 (0.95, 0.97)</b>	<b>0.95 (0.94, 0.95)</b>	0.00 (0.00, 0.95)	0.29 (0.27, 0.31)
6			0.97 (0.97, 0.97)	0.97 (0.97, 0.97)		
Low Tertile						
1	0.57 (0.53, 0.71)	0.57 (0.56, 0.59)	0.70 (0.67, 0.72)	0.67 (0.66, 0.68)	0.55 (0.33, 0.62)	0.52 (0.50, 0.53)
2	0.61 (0.40, 0.73)	0.57 (0.56, 0.58)	0.70 (0.63, 0.74)	0.69 (0.69, 0.70)	0.60 (0.37, 0.73)	0.56 (0.54, 0.57)
3	0.61 (0.45, 0.90)	0.60 (0.59, 0.62)	0.76 (0.66, 0.84)	0.72 (0.72, 0.73)	0.61 (0.42, 0.84)	0.59 (0.58, 0.61)
4	0.46 (0.46, 0.98)	0.66 (0.64, 0.67)	0.68 (0.68, 0.87)	0.60 (0.59, 0.61)	0.44 (0.44, 1.00)	0.65 (0.64, 0.66)
5	<b>0.95 (0.95, 0.96)</b>	<b>0.96 (0.96, 0.96)</b>	0.00 (0.00, 0.90)	0.44 (0.42, 0.47)	<b>0.98 (0.92, 0.98)</b>	<b>0.96 (0.96, 0.97)</b>
6	0.97 (0.97, 0.97)	0.97 (0.97, 0.97)			0.97 (0.97, 0.97)	0.97 (0.97, 0.97)

Abbreviations: IQR Interquartile Range, CI Confidence Interval

Corresponding figure in main text, Figure 4

Bold values represent the point at which 0.80 is met or exceeded in each category